

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Dominick Cestro) Group Art Unit: 3711
Title: dcs hi tek tate of the art aluminum 3) Examiner: Mark S. Graham
peice collapsable barell sprung pool)
cue with adjustable impact rod and tip)
Serial No.: 10/709,066)
Filed: 04-09-2004)

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

May 31, 2006

Attn: Commissioner for Patents

Dear Sir:

Please find the enclosed correspondence for the above referenced application:

1. Petition for Revival Under 37 C.F.R 1.137(b)
2. Response to non-final office action mailed on March 7, 2005 including:
 - a. Substitute specification
 - b. New claims
 - c. Replacement drawing
 - d. Applicant remarks
 - e. Substitute specification in clean text

3. Power of attorney

Applicant requests entry of all modifications and favorable action on all petitions.

Respectfully submitted,

A handwritten signature in black ink that reads "Mark V. Loen". The signature is written in a cursive style with a long horizontal flourish at the end.

Mark V. Loen

USPTO Registration Number 56,220

Phone (480) 775-5177

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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PETITION FOR REVIVAL UNDER 37 C.F.R 1.137(b)

Attn: Commissioner for Patents

Dear Sir:

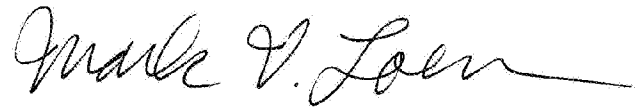
Applicant respectfully petitions for revival of the above identified application.

The patent office is requested to accept the enclosed response to the last office action mailed on March 7, 2005. Also enclosed is the petition fee as set forth under Rule 1.17(m) for a small entity.

Applicant hereby states: the entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(b) was unintentional.

Having complied with the requirements of 37 C.F.R 1.137(b) for revival of an application, such action is hereby requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Mark V. Loen". The signature is written in a cursive style with a long horizontal flourish at the end.

Mark V. Loen
Registration No. 56,220
Telephone (480) 775-5177

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Alexandria, VA 22313-1450

RESPONSE TO NON-FINAL OFFICE ACTION

Attn: Commissioner for Patents

Sir:

Enclosed is a response to the last non-final office action on the above referenced utility application. Per the requirement of the office, applicant is submitting a substitute specification in compliance with 37 CFR 1.52 filed according to 37 CFR 1.125(a) and (b), a title with reduced length, corrected drawings in compliance with 37 CFR 1.121(d), claims in compliance with 35 U.S.C. 112 second paragraph, and an abstract reduced to the required length.

Applicant hereby states that no new matter is introduced by the substitute specification.

Applicant also submits new claims per requirement by the Office.

Due to the extensive nature of the changes, and requirements of the Office, applicant also is submitting the substitute specification in clean text.

IN THE SPECIFICATION:

Please delete the prior specification and add the text of the substitute specification as follows:

~~DETAILED DESCRIPTION~~

~~{0001} detailed description of the housing or embodiment and inside workings turning now in detail to the appending drawings in detail and in particular to FIG. 7 is illustrated new age ,state of the art ,high tech, telescoping ,trigger activated ,3peice,collapsable pool cue or stick equipped with an adjustable impact rod which contains a spring barrel tension mechanism that stores a variable amount of energy or kinetic energy which is encased or housed in the rear part of the stick that is used in the game of pool or billiards.~~

~~{0002} This description is generally designated by reference numerals attached to the drawing in FIG. 7. Numbers 29 and 30 show the embodiment of the cue or stick which is the first step, FIG. 1.#1, in the birth of this new age, high tech stick, that starts out with a solid round aluminum billet that is four and 1/2 feet long or customized to the preference of the prospective owner. the o.d of the billet is one and {fraction (1/4)} inches. #32 shows where the second step of the process comes in where the billet is cut in two separate pieces and at the same spot that will be machine threaded at both ends with a male thread on one end, and female receiving end on the other to create a perfect seat when threaded together to complete the whole length and housing of the cue. #30 and #29 are now two separate pieces ready for the gun drilling process. each piece is drilled length wise with a gun drill bit, to bore a {fraction (1/8)}th inch hole or a {fraction (3/16)}ths hole perfectly through the center of each piece of aluminum this process assures that the meeting points of #30 and #29 are perfectly centered for the next process which entails machining threads at point a and point b of the stick as shown in FIG. 7, #32 shown in~~

FIG. 7 is the center mating surface that when the two pieces are joined together it mates together a perfect flush straight rod when screwed together and tightened. #25 shows the male threaded end A of the center of the cue joined together with the female threaded end B of the center of the cue joined together to make a perfect mating surface. the next step of the process is to have both #29 and #30 joined together and tight by the threaded area at points A and B and have a flush mating surface at #32 of FIG. 7. At this point in the process both pieces of the aluminum rod or billet are mated as one solid stick or rod ready to be mounted pm a turning lathe to produce the gradual taper #33 from the rear of the stick to the front of the stick that produces a high quality machined or polished finish with a standard taper that is the same of all pool cues on the market that are made of wood, titanium or graphite or any other material used to fabricate pool cues. the rear part of the stick #31 that houses the spring barrel and tension mechanism. it has an o.d of $\frac{5}{8}$ ths of an inch that has a depth of 4 to 6 inches starting at the but end of the stick which is drilled out with a flat faced bore bit to ensure a #34 square taper at the tip of the bit and at the end of the aluminum when the desired drilling depth is attained. #35 of FIG. 7 is $\frac{1}{2}$ inches in diameter and has a depth of $\frac{3}{4}$ ths deep of the existing metal #36 of FIG. 7 is a $\frac{5}{16}$ ths hole drilled in the center of the $\frac{1}{2}$ inch hole which housed #12 the trigger release mechanism. And a machined aluminum retainer ring for the trigger release mechanism to keep it from backing out in FIG. 4, #41. It also is a stopping point for the trigger so it only depresses so far and returns so far. At this point of the machining or fabrication process we have a hollow embodiment or housing that has been drilled machined and fabricated to certain specifications and or criteria to contain or house these specific moving parts. The first

mechanism #20 and #21 that is aluminum is the impact rod which is a two piece rod that is threaded #26 and screwed together, the piece that is referred to in FIG. 7, #13 the barrel spring mechanism which is machined out of a $\frac{3}{4}$ " piece of brass, that is approximately 3" long and has 4 slots machined throughout the length of it to accommodate the trigger on one end of the barrel it has a $\frac{1}{4}$ " threaded hole to accept the impact rod and on the other end it has a machined recess #40 to accommodate a riding washer for the spring for smooth twisting for the tension adjuster at the rear of the stick. The opposite end of the barrel has a spring #14, which is soldered or twisted into the opposite end of it to make it one complete piece and or changeable to the owners choice. At this point in the process we can now take the complete barrel spring and impact rod #21, #19, #27, #14, and #13 and insert it through the rear of the stick #29. The next step in the process is to take #17 which is a solid $\frac{1}{2}$ inch piece of brass or metal of choice that is pinned through the aluminum, #28, on each side that has a $\frac{3}{16}$ ths or $\frac{1}{8}$ th inch hole through the center that has a fine thread, #37, before #37 is installed into the rear of the stick there is a fine threaded T rod, #15 and #16, #15 being a $\frac{5}{8}$ ths in. diameter brass or aluminum plate that is $\frac{1}{4}$ th in. thickness, the complete piece #15 and #16, is screwed through or threaded into #17, the complete assembly is #15,16,17, and #28 are all installed into the rear end of the stick, #29, as one complete unit and pinned #28 at this point the threaded T rod is protruding outward from the end of the stick. #18 described as the tension adjustment coupler which can be pinned or welded to the end of the threaded T rod, #15 and #16 so it can be twisted counter clockwise or clockwise to adjust the amount of tension applied to the barrel spring #14 and #13 as one unit to store and create

kinetic energy to be released when trigger #12 is depressed. The next step of the process is to install the tip #23, which has a $\frac{1}{4}$ th in., or $\frac{3}{16}$ ths in. hole machined in the rear part of the tip, #38, mounting area and inserts over the impact rod #21 and #19 so that the back side of the tip butts flush up against the front end of the stick, and in turn #22 is then installed which is a set pin to mount and make the impact rod and tip one. #24 is a $\frac{1}{4}$ th in. hole or $\frac{1}{8}$ th in. hole that is knurled to accommodate various different tips desired by the user: described as a quick change tip. The last part and piece to be installed is the trigger or button FIG. 12. That is first installed by putting tension spring #11, inserted in space #35 where the trigger or button is housed the next step is to take the trigger or release button #12 and insert it into space #35 and depress it down over the tension spring #11. With the button held in its depressed mode, refer to FIG. 4 part #41 is the retainer ring or keeper which is slid down the length of the stick into its permanent position to retain the button in its place. When the trigger is installed, FIG. 12, it also drops down into the trigger cavity, #36, that drops down into the eye hole of the barrel spring as shown in FIG. 7 diagram B, #39, that keeps it in its cocked position until the trigger, #12, is depressed and actuates the barrel spring #14,13,19,21, and #23 which in turn, releases the stored kinetic energy desired by the user to move or impact balls in the game of billiards. Diagram B in FIG. 7 is the detailed drawing of the barrel spring mechanism showing the spoon shaped slotted eye hole, that the trigger or release mechanism, #12, that slides forward and rearward in its cocked position and released position. FIG. 8 shows all of the metals and certain moving parts used to make this unique pool cue work properly.

TITLE OF THE INVENTION

[0001] Spring Activated Pool Cue Designed for Convenient Storage

CROSS REFERENCE TO RELATED APPLICATIONS

[0002] This application claims the benefit of U.S. Provisional Patent Application Serial Number 60/320,147 filed on 04-25-2003. The entire disclosure is incorporated by reference herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0003] Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR COMPUTER PROGRAM LISTING

[0004] Not applicable.

BACKGROUND OF THE INVENTION

(1) Field of the Invention

[0005] This invention is directed toward pool cues used in games that are played on a billiard table such as pool, billiards, snooker, and the like. The pool cue of this invention is a hollow shaft wherein a mechanical spring loaded mechanism is activated inside the cue so that the cue tip is projected outward to strike a billiard ball. The striking force may be varied by an adjustment at the end of the cue. The design of the cue looks very similar to a standard pool cue that is manually struck against the billiard ball. The cue is designed to be disassembled for convenient storage and transport.

(2) Description of Related Art

[0006] US Patent Numbers 6,348,006, 5,628,691, 4,949,964, and 4,718,671 all disclose various methods of creating a variable length cue stick. The methods in these patents include screw assembly and telescoping. Various locking methods are disclosed to fix the telescoping length.

[0007] US Patent Number 5,411,441 discloses a cue tip that is spring loaded in connection with a silicone encasement. The goal is to provide additional momentum to the ball when struck.

[0008] US Patent Number 5,299,983 discloses a spring activated cue using a ratchet and pawl. The invention is overly complicated in order to move the cue tip forward and backward, and most of the cue length moves relative to the end which contains the spring actuation mechanism. This makes it difficult for an operator to hold and aim correctly.

[0009] US Patent Number 4,634,123 discloses a spring activated cue using a saw tooth ratchet mechanism that locks the cue tip inside the hollow cue shaft. It is difficult for the operator to know exactly where the cue tip will strike the ball as the cue tip is recessed within the hollow cue.

[0010] US Patent Number 4,526,370 discloses a spring activated cue designed with two pieces: a moving portion and a fixed portion. The moving portion is difficult for the operator to hold steady and strike on the desired ball spot when suddenly activated.

[0011] US Patent Number 4,134,588 discloses a spring activated cue tip for a shorter cue length with an awkward push button and method to vary the striking force. The striking force is restricted to a few select forces and is not continuously adjustable.

[0012] US Patent Number 3,447,805 discloses a spring activated cue. Similar to US Patent Number 4,526,370 the moving portion is difficult for the operator to hold steady and strike on the desired ball spot when activated. Also the striking force is restricted to a few select forces and is not continuously adjustable.

[0013] US Patent Number 1,604,023 discloses a spring activated cue tip with a moving stock piece at the end of the cue. When activated, the device is designed for the cue tip to strike the ball and return to the latched position. To do this, a stock piece at the other end pops out. The

end stock piece is then pressed inward to reset the device. There is additional internal undesirable movement that disturbs the aim of the operator and makes the striking force less predictable.

[0014] US Patent Number 1,182,530 discloses a spring activated cue tip that includes two springs and a gun trigger type of release mechanism. A primary forcing shaft strikes a secondary shaft which is attached to the cue tip. The energy needed to activate the device is set by a sliding collar. The collar is troublesome and the operator must remember to slide it to the proper forward position or the device activation will impact the collar which is liable to hurt the operator's hand. The gun trigger is an unnatural and undesirable way of holding a cue, making the cue awkward to aim.

[0015] US Patent Numbers 673,753 and 673,693 both disclose a spring activated cue. Similar to US Patent Number 4,526,370, the suddenly moving portion is difficult for the operator to hold steady and strike on the desired ball spot when activated. Two springs are used to create the striking energy and also retract the moving portion partially into the fixed portion.

[0016] In addition, in US Patent Numbers 4,634,123, 4,526,370, 4,134,588, and 3,447,805 the adjusting mechanism provides a higher striking force with the longer ball striking movement which is undesirable as a longer cue may contact other balls causing a game violation.

[0017] None of the above disclosed spring activated devices provide for operator convenience in traveling or storage. There has been no consideration for convenient disassembly for a more convenient length suitable for a carrying or storage nor has there been consideration for economic and simplified manufacturability.

BRIEF SUMMARY OF THE INVENTION

[0018] This invention is directed toward a piece pool cue that is designed to strike the cue ball with a cue tip that is spring activated and also overcomes the problems just mentioned with similar devices. The device has also been specifically designed to be taken apart for storage, transport, and easy repair.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0019] Fig. 1 is a general arrangement of the spring activated pool cue as a cross section.

[0020] Fig. 2 is a detail of a release cylinder used in the activation mechanism.

[0021] Fig. 3 is a detail of a retaining ring for the release button.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Figure 1 shows a general arrangement cross section of the pool cue as conceived in this invention. To aid in understanding this general arrangement, the pool cue is made up of the following items:

<u>[0023]</u>	<u>No.</u>	<u>Description</u>
	<u>10</u>	<u>Release mechanism cavity</u>
	<u>11</u>	<u>Trigger release button spring</u>
	<u>12</u>	<u>Trigger release button</u>
	<u>13</u>	<u>Release cylinder</u>
	<u>14</u>	<u>Barrel spring</u>
	<u>15</u>	<u>End plate</u>
	<u>16</u>	<u>Threaded rod</u>
	<u>17</u>	<u>Threaded bushing</u>
	<u>18</u>	<u>Tension adjustment coupler</u>

- 19 Rear impact rod
- 20 Stop edge
- 21 Front impact rod
- 22 Pin
- 23 Machined tip
- 24 End impact tip
- 25 Threaded connection for cue barrels
- 26 Threaded connection for impact rods
- 28 Rear cue barrel
- 30 Front cue barrel
- 31 Contact point
- 33 Barrel taper
- 35 Drilled opening in rear cue barrel
- 40 Machined recess

[0024] The cue is made up of two elongated barrels, a front cue barrel **30** and a rear cue barrel **28**. Both barrels may be made from materials such as aluminum, titanium, graphite, and wood. A preferred embodiment is to begin with a solid aluminum dowel or billet. The overall length of the cue can vary from a typical four and one half feet long to any length specified by a prospective owner. The barrel outside diameter is preferably 1.25 inches. The barrels are preferably made by drilling length wise with a gun drill bit to bore 1/8 inch hole or a 3/16 inch hole as illustrated to allow the front impact rod **21** and rear impact rod **19** to freely move. A taper **33** is machined on the outside diameter the front cue barrel **30** and rear cue barrel **28** to

match existing cue designs. The outside of the barrels can be given a high quality machined or polished finish.

[0025] It should be noted that Fig. 1 is not drawn to scale. The length is shortened for the sake of showing the important features of the invention.

[0026] The front cue barrel **30** and rear cue barrel **28** are carefully machined so that they can be screwed together by male and female threads **25** near the middle of the overall cue length. The machining must be done carefully to ensure that the mating surfaces keep the overall cue assembly straight.

[0027] The rear cue barrel **28** is also drilled or machined out, preferably to 5/8 inches in diameter and 4 to 6 inches deep, to allow the barrel spring **14** and release mechanism assembly to be inserted into the cue. A stop edge **20** illustrates where the diameter changes. The end diameter of the rear cue barrel **28** is also machined to allow room for the tension adjustment coupler **18** to be assembled.

[0028] The rear cue barrel **28** is also drilled out **35**, preferably to 3/8 inches in diameter and just deep enough to allow the trigger release button **12** and the trigger release button spring **11** to be inserted. A spring release mechanism cavity **10** is created inside the rear cue barrel **28** by the machining and drilling.

[0029] The barrel spring **14** and release mechanism assembly is designed to provide for continuously variable energy storage in the barrel spring and provide for a fixed stroke length for striking a billiard ball.

[0030] The energy stored in the barrel spring **14** is adjusted by an assembly of four parts. A threaded rod **16** is firmly fixed to a threaded tension coupler **18** and an end plate **15** so that they all rotate together. A threaded bushing **17** is fixed to the end of the rear cue barrel **28** by a pin or

other means. When the tension adjustment coupler is turned, the threaded rod 16 turns inside the threaded bushing 17 and causes the end plate 15 to move and compress the barrel spring 14.

This assembly provides for a continuously variable amount of stored energy. The stiffness of the spring may be designed to the preference of the owner.

[0031] The trigger release assembly consists of three important parts. A trigger release button 12 is inserted in the rear cue barrel and also in a release cylinder 13. A trigger release button spring 11 is under the trigger release button 12. The mechanism is shown in the locked position with spring force being applied to the trigger release button.

[0032] When the trigger release button 12 is pressed into the rear cue barrel 28, the contact 31 between the trigger release button 12 and the release cylinder 13 is removed and the release cylinder 13 then slides forward until the stop edge 20 prevents movement. The trigger release button 12 is machined to a shape that matches slots in the release cylinder 13 to allow the motion to occur. The trigger release button spring 11 helps to prevent unwanted activation of the pool cue by keeping the trigger release button 12 in the locked position until activated by the owner. It also provides for a convenient re-locking action on the trigger release button 12 when getting ready for the next pool shot.

[0033] A machined recess 40 on the release cylinder 13 provides support for the barrel spring 14 and optionally includes room for a washer to ensure a smooth turning for the barrel spring 14 when the spring compression is adjusted.

[0034] When the release cylinder 13 is allowed to slide forward, it then pushes the rear impact rod 19 forward. The rear impact rod 19 is firmly threaded into the release cylinder 13. The rear impact rod 19 is connected to a front impact rod 21 by a threaded connection 26. The front impact rod 21 is connected to a machined tip 23 which is attached by a pin 22 or other means.

The machined tip 23 is then attached to an end impact tip 24 which will actually strike the billiard ball. The attachment design for the end impact tip 24 may be by glue, threading, press fit, or other mounting means. The end impact tip 24 may be a typical material used in pool cues as desired by the owner. The attachment may include the use of a knurled or threaded hole. Various designs may be used that allow a quick change.

[0035] The pool cue may be disassembled for storage by first unscrewing the front impact rod 21 and then unscrewing the front cue barrel 30. The rear impact rod 19 is prevented from rotating because the release cylinder 13 is prevented from rotating by the trigger release button 12.

[0036] The pool cue is reset for the next shot merely by pushing the impact rods and tip assembly back into the cue. The trigger release button spring 11 pushes the trigger release button 12 into the locked position and which holds the cue ready for the next shot.

[0037] Fig. 2 shows a detail of the release cylinder 13 in a view in the same direction as the release button motion. An enlarged eyehole 39 is designed to engage a larger diameter of the trigger release button 12 and provide a smaller diameter slot 32 that will slide past the trigger release button 12 when the invention is activated.

[0038] Fig. 3 shows an additional important detail that is omitted in Fig. 1. A machined aluminum retainer ring 41 is added to the outside diameter of the rear cue barrel 28. It slides over the length of the cue in the direction as illustrated to lock the trigger release button 12 inside the rear cue barrel 28 and prevent it from falling out. The retainer ring 41 has an outside diameter small enough to allow the trigger release button 12 only enough motion to perform its function and not spring out.

[0039] In general, the cue can be modified as per the desires of the owner. The overall design provides for the use of a variety of materials. Also the cue exterior may be modified by various paints, surface textures, anodizing, and knurling.

[0040] This invention lends itself very readily to the use by persons with handicaps or disabilities.

[0041] This invention may be adapted in length to fit for use by the preference or need of the owner.

[0042] This cue barrels have been designed, in a preferred embodiment, to be made by the use of standard machining techniques from an aluminum dowel or billet. This allows the customization of the cue to the length, surface texture, and appearance specified by an owner.

[0043] While various embodiments of the present invention have been described, the invention may be modified and adapted to various similar pool cues to those skilled in the art. Therefore, this invention is not limited to the description and figure shown herein, and includes all such embodiments, changes, and modifications that are encompassed by the scope of the claims.

IN THE DRAWINGS:

Please replace all drawings with the replacement sheet showing Fig. 1, Fig. 2, and Fig. 3.

IN THE ABSTRACT:

Please delete the original abstract and amend it as follows:

ABSTRACT OF THE DISCLOSURE

This new high tech state of the art pool cue refers to the game of pool and snooker and the like. This invention includes a hollowed out aluminum embodiment that is machined to specific specifications and has the standard shape appearance, length, taper, and looks of standard pool cues made in the years past with a lot of serious changes. The hollowed out embodiment houses a series of machined moving parts. When the stick is assembled it breaks down into a three piece collapsible stick that screws together. The rear part of the stick housed the barrel spring and tension mechanism, and one half of the impact rod, that controls, or adjusts by the user. The amount of impact or kinetic energy that will be released when the user presses the trigger by the turn of a coupler at the rear of the stick. The front end or part of the stick houses the other half of the impact rod and tip which pops out, extends, or telescopes energy pushing the impact rod and tip forward in motion to move the balls in the game of pool or snooker and games alike. When the user is ready to cock the stick the user merely depresses the impact rod and tip back into the stick while chalking the tip. The amazing facts about this high tech poll cue. It has changeable tips at the twist of a finger, it can also be made of graphite and all metals, this cue can also be made of different weights and lengths upon request of the user. In the game of pool there are breaking sticks and playing sticks, this cue alleviates the breaking stick. This stick can also be anodized to any color requested or design. It can also be used with or without the impact tip in use. The this cue stick is also easily returned to its cocked

~~position and ready to take another shot by depressing the stick while its being chalked for the next shot or by merely turning it upside down and pushing the embodiment down. new high tech state of the art pool cue is a one of a kind invention, many have tried with their preposterous ideas, but I have succeeded, with this in mind, a trademark is born (NixStix) Dominick Castro, inventor, manufacturer, genius, creator and designer.~~

A spring activated pool cue is disclosed for use in games such as billiards. The device has also been designed to be taken apart for convenient storage and transport.